



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/779,586	02/09/2001	Toshiro Hayakawa	Q61222	6818

7590

05/07/2003

SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC  
2100 Pennsylvania Avenue, N.W.  
Washington, DC 20037-3202

EXAMINER

JACKSON, CORNELIUS H

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/779,586

Applicant(s)

HAYAKAWA, TOSHIRO

Examiner

Cornelius H. Jackson

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.



PAUL IP  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

Art Unit: 2828

## **DETAILED ACTION**

### ***Acknowledgment***

1. Acknowledgment is made that applicant's Amendment, filed on 05 February 2003, has been entered. Upon entrance of the Amendment, claims 1, 11 and 12 were amended and claim 10 was cancelled. Claims 1-9 and 11-12 are now pending in the current application.

2.

### ***Specification***

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 2828

5. Claims 1, 4-6 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kafka et al. (5365366). Kafka et al. discloses a laser apparatus **FIG. 1** comprising a semiconductor laser element **28** which emits first laser light **34** having a first wavelength; a surface-emitting semiconductor element **20** which is excited with the first laser light **24**, emits second laser light having a second wavelength which is longer than the first wavelength, and has an active layer **20** and a first mirror **14** arranged on one side of the active layer **20**; a second mirror **16** which is arranged outside the surface-emitting semiconductor element **20** so that the first and second mirrors **14,16** form a resonator in which the second laser light resonates; and a modulation unit which modulates the surface-emitting semiconductor element **50**, wherein the second mirror **16** is physically separated from the surface-emitting semiconductor element by an air gap, **see col. 3, line 49-col. 6, line 55**.

Regarding claims 4-5, Kafka et al. discloses a structure for controlling the spatial mode **108** and all the other stated limitations, **see col. 8, line 59-col. 10, line 15**.

Regarding claim 6, Kafka et al. discloses the first mirror has a limited area being arranged in parallel with a light-exit end surface of the surface-emitting semiconductor element, **see FIG. 1**.

Regarding claim 9, Kafka et al. discloses all the stated limitations, **see FIG. 1**.

6. Claims 1, 4-8 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Caprara et al. (6097742). Caprara et al. discloses a laser apparatus **FIGS. 5 and 6** comprising a semiconductor laser element which emits first laser light **42** having a first wavelength; a surface-emitting semiconductor element **32** which is excited with the first

laser light **42**, emits second laser light having a second wavelength which is longer than the first wavelength, and has an active layer **34** and a first mirror **30** arranged on one side of the active layer **34**; a second mirror **26** which is arranged outside the surface-emitting semiconductor element **32** so that the first and second mirrors **30,26** form a resonator in which the second laser light resonates; and a modulation unit which modulates the surface-emitting semiconductor element **82**, wherein the second mirror **26** is physically separated from the surface-emitting semiconductor element by an air gap, **see col. 6, line 33-col. 7, line 53 and col. 13 , line 60-col 16, line 65.**

Regarding claims 4-5, Caprara et al. discloses a structure for controlling the spatial mode **52** and all the other stated limitations, **see col. 9, line 66-col. 10, line 17.**

Regarding claims 6 and 7, Caprara et al. discloses the first mirror has a limited area being arranged in parallel with a light-exit end surface of the surface-emitting semiconductor element and all the other stated limitations, **see FIGS. 5 and 6.**

Regarding claims 8 and 11, Caprara et al. discloses all the stated limitations, **see FIGS. 5 and 6.**

7. Claims 1, 4-8 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Raymond et al. (6097742). Raymond et al. discloses a laser apparatus **FIGS. 1 and 3** comprising a semiconductor laser element **100** which emits first laser light **102** having a first wavelength; a surface-emitting semiconductor element **10** which is excited with the first laser light **102**, emits second laser light **52** having a second wavelength which is longer than the first wavelength, and has an active layer **16** and a first mirror **14** arranged on one side of the active layer **16**; a second mirror **22** which is arranged

Art Unit: 2828

outside the surface-emitting semiconductor element **10** so that the first and second mirrors **14,22** form a resonator in which the second laser light **52** resonates; and a modulation unit which modulates the surface-emitting semiconductor element **see col. 7, lines 29-48**, wherein the second mirror **22** is physically separated from the surface-emitting semiconductor element by an air gap, **see col. 4, line 53-col. 6, line 51 and col. 8, lines 34-65**.

Regarding claims 4 and 5, Raymond et al. discloses a structure for controlling the spatial mode **52** and all the other stated limitations, **see col. 7, lines 29-48**.

Regarding claims 6 and 7, Raymond et al. discloses the first mirror has a limited area being arranged in parallel with a light-exit end surface of the surface-emitting semiconductor element and all the other stated limitations, **see FIGS. 1 and 3**.

Regarding claims 8 and 11, Raymond et al. discloses all the stated limitations, **see FIGS. 1 and 3**.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 2-3 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caprara et al. (6097742) or Raymond et al. (6097742) in view of Kurtz et al.

Art Unit: 2828

(5995529) and/or Jayaraman (5513204). Caprara et al., as applied to claims 1, 4-8 and 11 above, and Raymond et al. ., as applied to claims 1, 4, 6-8 and 11 above, teaches all the stated limitations, **see also Caprara et al. (FIG. 3 and col. 8, lines 39-67) or Raymond et al. (col. 2, lines 44-51 and col. 13, line 63-col. 14, line 12)** except for the modulation unit modulates the surface-emitting semiconductor element by varying a voltage applied to the pn/Schottky junction. Kurtz et al. and Jayaraman teach that a modulation unit which modulates the surface-emitting semiconductor element by varying a voltage applied to the pn/Schottky junction of an optically pumped laser is well known in the art, **see also Kurtz et al. (abstract and col. 1, lines 60-14) or Jayaraman (col. 4, lines 38-64 and claims 1-3 and 11-12)**. It has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claims 3 and 12-13, cited prior art discloses all the stated limitations, **see the corresponding claim rejections above.**

### ***Response to Arguments***

10. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.


Art Unit: 2828

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cornelius H. Jackson whose telephone number is (703) 306-5981. The examiner can normally be reached on 8:00 - 5:00, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

  
chi  
May 4, 2003

  
PAUL IP  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800